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One approach for solving optimization problems with apriori estimates of approximation of admissible set

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Abstract

Properties and construction principles of a satisfactory approximation for the set of admissible solutions to a constrained optimization problem are studied. The replacement of the initial admissible set by its satisfactory approximation in the course of solution makes it possible to construct finite algorithms for the methods of interior and exterior points (the penalty function method, or the method of centers) with a stopping criterion ensuring a given accuracy of the obtained solution. Necessary and sufficient conditions for constructing outer and inner satisfactory approximations of the admissible set are obtained. A feasible procedure for specifying a set being a satisfactory approximation of the admissible set is described, which can be used for constructing algorithms ensuring the achievement of a given accuracy in a finite number of iterations. © 2013 Pleiades Publishing, Ltd.

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Keywords

feasible stopping criterion, method of centers, methods of sequential unconstrained minimization, penalty function method, satisfactory approximation of the admissible set, solution of an optimization problem with a given accuracy